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LEVIER for retaining the genera Calypogeia and Gongylanthus as against Kantia and Cincinnulus, gives the synonymy of *C. fissa*, mentions the other N. Am. species, and proposes a new combination (*C. portoricensis*) for a West Indian species.—F. LAMSON-SCRIBNER (*Rhodora* 9:17-23. 1907) has presented the eastern species of Muhlenbergia, suggesting a somewhat new classification and segregating several sub-species and one new species.—M. L. FERNALD (*idem* 23-25) has described the alpine Rhinanthus of Quebec and New Hampshire as a new species (*R. oblongifolius*).—W. W. EGGLESTON (*Torreya* 7:35, 36. 1907) has described 2 new species of Crataegus, one from Vermont, the other Mexican.—P. A. RYDBERG (*Bull. Torr. Bot. Club* 34:35-50. 1907), in his 17th "Studies of the Rocky Mountain flora," has described new species in Pedicularis, Adenostegia, Castilleja (13), Lupinus (10), Trifolium (4), Tium, Hamosa, Xylophacos, and Homalobus (2).—L. DIELS (*Bot. Jahrb.* 39:469-486. 1907), in a synopsis of African Anonaceae, describes *Tetrastemma* as a new genus.—A. ENGLER (*idem* 573-580) has published *Sloetiopsis* (Moraceae) and *Pierreodendron* (Simarubaceae) as new African genera.—A. BRAND (*Pflanzenreich*, part 27. 1907), in a monograph of Polemoniaceae, recognizes 12 genera and 277 species, and describes new species in Cantua (2), Polemonium (3), Phlox (9), Gilia (12), Navarretia (7), and Langloisia.—W. BOTTING HEMSLEY (*Annals of Botany* 21:71-77. pls. 9-10. 1907) has described a new genus (*Seychellaria*) of Triuridaceae from the Seychelles.—CARDOT and THERIOT (*Univ. of California Publications, Bot.* 2:297-308. 1906), in a list of Alaskan mosses collected by W. A. SETCHELL and others in 1889, describe and illustrate new species in Orthotrichum, Bryum (2), and Hypnum.—H. CHRIST (*Bull. Herb. Boiss.* II. 7:257-274. 1907), in presenting the ferns of his *Costa Rican Flora*, describes 17 new species; and also (*idem* 275, 276) describes a new fern genus (*Lathyropteris*) from Madagascar, with characters intermediate between those of Pellaea and Pteris.—E. LEMMERMANN (*Bot. Jahrb.* 38:343-382. 1907), in an account of the algal flora of the Chatham Islands, describes a new genus (*Dermocarpella*) of Chamaesiphoniaceae.—G. W. WILSON (*Bull. Torr. Bot. Club.* 34:61-84. figs. 10. 1907), in the first paper of a series entitled "Studies in N. Am. Peronosporales," presents the genus *Albugo*, gives lists of hosts, recognizes 13 species, and describes one as new.—Miss G. S. BURLINGHAM (*idem* 85-95) has described 6 new species of *Lactarius* from Vermont.—C. H. PECK (*idem* 97-104) has described 20 new species of fungi, in 18 genera.—J. M. C.

**Biometric studies.**—FAWCETT<sup>8</sup> has studied the variation in number of ray-flowers in the following Compositae: *Anthemis Cotula* from seven localities, *Achillea Millefolium* from four localities, and *Senecio triangularis*, *Aster adscendens*, and *Erigeron salsuginosus*, each from one locality. The results are not well discussed, but the data are given in tables and also represented by curves which show the following facts of interest: (a) Only in the case of *Anthemis* and *Achillea* were the numbers sufficient to give dependable results. (b) Both of these give

<sup>8</sup> FAWCETT, H. S., Variation in ray flowers of *Anthemis Cotula* and other Composites. *Proc. Iowa Acad. Sci.* 1905:55-58. pls. 12-20. 1905.

strongly monomodal curves, the former with the mode at 13, the latter with the mode at 5, thus supporting LUDWIG's view as to the prevalence of the terms of the Fibonacci series as modal numbers in the variation curves for ray-flowers. (c) Individual variation is shown in several tables, including about 70 individuals of *Anthemis* and 40 individuals of *Achillea*. These show that considerable differences occur, but so far as can be seen each habitat studied shows about the same series of individual variabilities. (d) Collections of the same species from different localities show little place-variation except in one instance. The number of rays in the heads of *Achillea* are only four in a much larger percentage of the heads at Ames, Iowa, than at three other localities from which material was secured. (e) Collections of *Anthemis* in a single habitat near Ames, in August and again in September, show a somewhat higher average number of rays at the time of the earlier collection, in this agreeing with results reached by the reviewer in the genus *Aster*. The modal number was 13 in both collections. It is stated that greater variability was observed in the ray-flowers of *Anthemis* growing in rich soil than elsewhere, but the data upon which this statement rests do not appear in the tables.

The number of seeds of the lotus, *Nelumbium luteum*, as it occurred in the western part of Lake Erie in 1902, has been studied statistically by PEARL,<sup>9</sup> who finds that the distribution of the variates gives a good example of the normal curve with the following constants: average  $24.874 \pm 0.078$ , standard deviation  $4.339 \pm 0.055$ , coefficient of variation  $17.445 \pm 0.162$ . A complete analysis of the curve is made and its departures from the theoretical are accounted for as due to random sampling. An interesting numerical relation bearing upon the distribution of fecundity is pointed out. It appears that capsules bearing fewer than the median number of seeds produce only 42.96 per cent. of the total number of seeds, while the remaining 57.04 per cent. are borne by plants which severally produce more than the median number. This fact is conditioned by the normal form of the curve. The maintaining of the normal curve would seem to require either that the inheritance of seed-number is inappreciable or that there is unequal elimination of the seeds coming from large and from small heads.—G. H. SHULL.

**Development of the seed of Alsinoideae.**—Miss GIBBS,<sup>10</sup> in working over the development and germination of the seed in the subfamily Alsinoideae, of the Caryophyllaceae, has shown that in these features there is a marked uniformity in this group, with evidences of a progressive specialization showing a trend from the Sperguleae to the Alsineae. The latter is indicated especially by an increase in size, and presumably in efficiency as an absorbing organ, of the suspensor; and also by the increased specialization of the inner layer of the outer integument, which is believed to serve as a water jacket in the developing seed. The structure

<sup>9</sup> PEARL, R., Variation in the number of the seeds of lotus. Amer. Nat. 40:757-768. figs. 4. 1906.

<sup>10</sup> GIBBS, L. S., Notes on the development and structure of the seed in the Alsinoideae. Annals of Botany 21:25-55. pls. 5-6. figs. 4. 1907.